

SEQUENCE LISTING

<110> WANG, CHANG YI

<120> SYNTHETIC PEPTIDE COMPOSITION AS IMMUNOGENS FOR
PREVENTION OF URINARY TRACT INFECTION

<130> 1151-4165

<140> TO BE ASSIGNED

<141> 2000-12-22

<160> 88

<170> PatentIn Ver. 2.1

<210> 1

<211> 268

<212> PRT

<213> Escherichia coli

<400> 1

Phe Ala Cys Lys Thr Ala Asn Gly Thr Ala Ile Pro Ile Gly Gly Gly
1 5 10 15

Ser Ala Asn Val Tyr Val Asn Leu Ala Pro Val Val Asn Val Gly Gln
20 25 30

Asn Leu Val Val Asp Leu Ser Thr Gln Ile Phe Cys His Asn Asp Tyr
35 40 45

Pro Glu Thr Ile Thr Asp Tyr Val Thr Leu Gln Arg Gly Ser Ala Tyr
50 55 60

Gly Gly Val Leu Ser Asn Phe Ser Gly Thr Val Lys Tyr Ser Gly Ser
65 70 75 80

Ser Tyr Pro Phe Pro Thr Thr Ser Glu Thr Pro Arg Val Val Tyr Asn
85 90 95

Ser Arg Thr Asp Lys Pro Trp Pro Val Ala Leu Tyr Leu Thr Pro Val
100 105 110

Ser Ser Ala Gly Gly Val Ala Ile Lys Ala Gly Ser Leu Ile Ala Val
115 120 125

Leu Ile Leu Arg Gln Thr Asn Asn Tyr Asn Ser Asp Asp Phe Gln Phe
130 135 140

Val Trp Asn Ile Tyr Ala Asn Asn Asp Val Val Val Pro Thr Gly Gly
145 150 155 160

Asp Ser Ala Arg Asp Val Thr Pro Asp Tyr Pro Gly Ser Val Pro Thr
165 170 175

Pro Leu Thr Val Tyr Ala Lys Ser Gln Asn Leu Gly Tyr Tyr Leu Ser
180 185 190

Thr Thr Ala Ala Gly Asn Ser Ile Phe Thr Asn Thr Ala Ser Phe Ser
195 200 205

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Pro Ala Gln Gly Val Gly Val Gln Leu Thr Arg Asn Gly Thr Ile Ile
210 215 220

Pro Ala Asn Asn Thr Val Ser Leu Gly Ala Val Gly Thr Ser Ala Val
225 230 235 240

Ser Leu Gly Leu Thr Ala Asn Tyr Ala Arg Thr Gly Gly Gln Val Ala
245 250 255

Asn Val Gln Ser Ile Ile Gly Val Thr Phe Val Gln
260 265

<210> 2

<211> 27

<212> PRT

<213> Escherichia coli

<400> 2

Cys Lys Ile Ala Asn Gly Ile Ala Ile Pro Ile Gly Gly Gly Ser Ala
1 5 10 15

Asn Val Tyr Val Asn Leu Ala Pro Val Val Cys
20 25

<210> 3

<211> 25

<212> PRT

<213> Escherichia coli

<400> 3

Phe Ala Cys Lys Thr Ala Asn Gly Thr Ala Ile Pro Ile Gly Gly Glu
1 5 10 15

Ser Ala Asn Val Tyr Val Asn Leu Ala
20 25

<210> 4

<211> 25

<212> PRT

<213> Escherichia coli

<400> 4

Phe Ala Ser Lys Thr Leu Asn Gly Thr Ala Ile Pro Ile Gly Glu Gly
1 5 10 15

Ser Ala Asn Cys Tyr Val Asn Leu Ala
20 25

<210> 5

<211> 13

<212> PRT

<213> Escherichia coli

<400> 5

Cys Ala Ser Lys Thr Ala Asn Gly Thr Ala Ile Pro Cys

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1	5	10
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<210> 6
 <211> 9
 <212> PRT
 <213> Escherichia coli

 <400> 6
 Cys Asp Tyr Pro Glu Thr Ile Thr Cys
 1 5

<210> 7
 <211> 11
 <212> PRT
 <213> Escherichia coli

 <400> 7
 Cys Asn Asp Tyr Pro Glu Thr Ile Thr Asp Cys
 1 5 10

<210> 8
 <211> 18
 <212> PRT
 <213> Escherichia coli

 <400> 8
 Cys Ile Leu Arg Gln Thr Asn Asn Tyr Asn Ser Asp Asp Phe Gln Phe
 1 5 10 15

Val Leu

<210> 9
 <211> 15
 <212> PRT
 <213> Hepatitis B virus

 <400> 9
 Phe Phe Leu Leu Thr Arg Ile Leu Thr Ile Pro Gln Ser Leu Asp
 1 5 10 15

<210> 10
 <211> 30
 <212> PRT
 <213> Bordetella pertussis

 <400> 10
 Lys Lys Leu Arg Arg Leu Leu Tyr Met Ile Tyr Met Ser Gly Leu Ala
 1 5 10 15

Val Arg Val His Val Ser Lys Glu Glu Gln Tyr Tyr Asp Tyr
 20 25 30

<210> 11

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<211> 17
<212> PRT
<213> Clostridium tetani

<400> 11
Lys Lys Gln Thr Ile Lys Ala Asn Ser Lys Phe Ile Gly Ile Thr Glu
1 5 10 15
Leu

<210> 12
<211> 22
<212> PRT
<213> Clostridium tetani

<400> 12
Lys Lys Phe Asn Asn Phe Thr Val Ser Pro Tyr Leu Arg Val Pro Lys
1 5 10 15
Val Ser Ala Ser His Leu
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<210> 13
<211> 15
<212> PRT
<213> Bordetella pertussis

<400> 13
Tyr Met Ser Gly Leu Ala Val Arg Val His Val Ser Lys Glu Glu
1 5 10 15

<210> 14
<211> 27
<212> PRT
<213> Clostridium tetani

<400> 14
Tyr Asp Pro Asn Tyr Leu Arg Thr Asp Ser Asp Lys Asp Arg Phe Leu
1 5 10 15
Gln Thr Met Val Lys Leu Phe Asn Arg Ile Lys
20 25

<210> 15
<211> 24
<212> PRT
<213> Bordetella pertussis

<400> 15
Gly Ala Tyr Ala Arg Cys Pro Asn Gly Thr Arg Ala Leu Thr Val Ala
1 5 10 15
Glu Leu Arg Gly Asn Ala Glu Leu
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<210> 16
<211> 15
<212> PRT
<213> Measles virus

<400> 16
Leu Ser Glu Ile Lys Gly Val Ile Val His Arg Leu Glu Gly Val
1 5 10 15

<210> 17
<211> 20
<212> PRT
<213> Measles virus

<400> 17
Gly Ile Leu Glu Ser Arg Gly Ile Lys Ala Arg Ile Arg His Val Asp
1 5 10 15

Thr Glu Ser Thr
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<210> 18
<211> 17
<212> PRT
<213> Clostridium tetani

<400> 18
Trp Val Arg Asp Ile Ile Asp Asp Phe Thr Asp Glu Ser Ser Gln Lys
1 5 10 15

Thr

<210> 19
<211> 16
<212> PRT
<213> Clostridium tetani

<400> 19
Asp Val Ser Thr Ile Val Pro Tyr Ile Gly Pro Ala Leu Asn His Val
1 5 10 15

<210> 20
<211> 25
<212> PRT
<213> Chlamydia trachomatis

<400> 20
Ala Leu Asn Ile Trp Asp Arg Phe Asp Val Phe Cys Thr Leu Gly Ala
1 5 10 15

Thr Thr Gly Tyr Leu Lys Gly Asn Ser
20 25

<210> 21
<211> 23
<212> PRT
<213> Corynebacterium diphtheriae virus

<400> 21
Asp Ser Glu Thr Ala Asp Asn Leu Glu Lys Thr Val Ala Ala Leu Ser
1 5 10 15
Ile Leu Pro Gly His Gly Cys
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<210> 22
<211> 39
<212> PRT
<213> Corynebacterium diphtheriae virus

<400> 22
Glu Glu Ile Val Ala Gln Ser Ile Ala Leu Ser Ser Leu Met Val Ala
1 5 10 15
Gln Ala Ile Pro Leu Val Gly Glu Leu Val Asp Ile Gly Phe Ala Arg
20 25 30
Thr Asn Phe Val Glu Ser Cys
35

<210> 23
<211> 21
<212> PRT
<213> Plasmodium falciparum

<400> 23
Asp His Glu Lys Lys His Ala Lys Met Glu Lys Ala Ser Ser Val Phe
1 5 10 15
Asn Val Val Asn Ser
20

<210> 24
<211> 17
<212> PRT
<213> Schistosoma mansoni

<400> 24
Lys Trp Phe Lys Thr Asn Ala Pro Asn Gly Val Asp Glu Lys His Arg
1 5 10 15
His

<210> 25
<211> 14
<212> PRT
<213> Escherichia coli

<400> 25

Gly Leu Gln Gly Lys His Ala Asp Ala Val Lys Ala Lys Gly
1 5 10

<210> 26

<211> 19

<212> PRT

<213> Escherichia coli

<400> 26

Gly Leu Ala Ala Gly Leu Val Gly Met Ala Ala Asp Ala Met Val Glu
1 5 10 15

Asp Val Asn

<210> 27

<211> 20

<212> PRT

<213> Escherichia coli

<400> 27

Ser Thr Glu Thr Gly Asp Gln His His Tyr Gln Thr Arg Val Val Ser
1 5 10 15

Asn Ala Asn Lys
20

<210> 28

<211> 20

<212> PRT

<213> Hepatitis B virus

<400> 28

Ser Asp Phe Phe Pro Ser Val Arg Asp Leu Leu Asp Thr Ala Ser Ala
1 5 10 15

Leu Tyr Arg Glu
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<210> 29

<211> 12

<212> PRT

<213> Chlamydia trachomatis

<400> 29

Thr Ile Asn Lys Pro Lys Gly Tyr Val Gly Lys Glu
1 5 10

<210> 30

<211> 15

<212> PRT

<213> Measles virus

<400> 30

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Leu Ser Glu Ile Lys Gly Val Ile Val His Arg Leu Glu Gly Val
1 5 10 15

<210> 31
<211> 16
<212> PRT
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SEQUENCE DERIVED FROM MEASLES VIRUS

<400> 31
Asp Leu Ser Asp Leu Lys Gly Leu Leu Leu His Lys Leu Asp Gly Leu
1 5 10 15

<210> 32
<211> 16
<212> PRT
<213> Artificial Sequence

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SEQUENCE DERIVED FROM MEASLES VIRUS

<400> 32
Glu Ile Ser Glu Ile Arg Gly Ile Ile Ile His Arg Ile Glu Gly Ile
1 5 10 15

<210> 33
<211> 16
<212> PRT
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SEQUENCE DERIVED FROM MEASLES VIRUS

<400> 33
Asp Val Ser Asp Val Lys Gly Val Val Val His Lys Val Asp Gly Val
1 5 10 15

<210> 34
<211> 16
<212> PRT
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SEQUENCE DERIVED FROM MEASLES VIRUS

<400> 34
Asp Phe Ser Asp Phe Lys Gly Phe Phe Phe His Lys Phe Asp Gly Phe
1 5 10 15

<210> 35
<211> 15
<212> PRT
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SEQUENCE DERIVED FROM MEASLES VIRUS

<400> 35
Ile Ser Glu Ile Lys Gly Val Ile Val His Lys Ile Glu Gly Ile
1 5 10 15

<210> 36
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
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SEQUENCE DERIVED FROM MEASLES VIRUS

<400> 36
Met Thr Glu Ile Arg Thr Val Ile Val Thr Arg Met Glu Thr Met
1 5 10 15

<210> 37
<211> 15
<212> PRT
<213> Artificial Sequence

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SEQUENCE DERIVED FROM MEASLES VIRUS

<400> 37
Leu Ser Glu Ile Lys Gly Val Ile Val His Lys Leu Glu Gly Val
1 5 10 15

<210> 38
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: T HELPER
SEQUENCE DERIVED FROM MEASLES VIRUS

<400> 38
Ile Ser Glu Ile Lys Gly Val Ile Val His Lys Ile Glu Gly Ile
1 5 10 15

<210> 39
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
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 SEQUENCE DERIVED FROM MEASLES VIRUS

 <400> 39
 Ile Thr Glu Ile Arg Thr Val Ile Val Thr Arg Ile Glu Thr Ile
 1 5 10 15

 <210> 40
 <211> 15
 <212> PRT
 <213> Artificial Sequence

 <220>
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 SEQUENCE DERIVED FROM MEASLES VIRUS

 <400> 40
 Met Ser Glu Ile Lys Gly Val Ile Val His Lys Leu Glu Gly Met
 1 5 10 15

 <210> 41
 <211> 15
 <212> PRT
 <213> Artificial Sequence

 <220>
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 SEQUENCE DERIVED FROM MEASLES VIRUS

 <400> 41
 Leu Thr Glu Met Arg Thr Val Ile Val Thr Arg Met Glu Thr Val
 1 5 10 15

 <210> 42
 <211> 15
 <212> PRT
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 <400> 42
 Ile Ser Glu Ile Lys Gly Val Ile Val His Lys Ile Glu Gly Ile
 1 5 10 15

 <210> 43
 <211> 15
 <212> PRT
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<400> 43
Ile Thr Glu Ile Arg Thr Val Ile Val Thr Arg Ile Glu Thr Ile
1 5 10 15

<210> 44
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
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SEQUENCE DERIVED FROM MEASLES VIRUS

<400> 44
Met Ser Glu Met Lys Gly Val Ile Val His Lys Met Glu Gly Met
1 5 10 15

<210> 45
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
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SEQUENCE DERIVED FROM MEASLES VIRUS

<400> 45
Leu Thr Glu Ile Arg Thr Val Ile Val Thr Arg Leu Glu Thr Val
1 5 10 15

<210> 46
<211> 19
<212> PRT
<213> Artificial Sequence

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SEQUENCE DERIVED FROM MEASLES VIRUS

<400> 46
Ile Ser Ile Ser Gly Ile Lys Gly Val Ile Val His Lys Ile Glu Gly
1 5 10 15

Ile Leu Phe

<210> 47
<211> 19
<212> PRT
<213> Artificial Sequence

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SEQUENCE DERIVED FROM MEASLES VIRUS

<400> 47

Ile Ser Met Thr Glu Ile Arg Thr Val Ile Val Ile Arg Met Glu Thr
1 5 10 15

Met Leu Phe

<210> 48

<211> 19

<212> PRT

<213> Artificial Sequence

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SEQUENCE DERIVED FROM MEASLES VIRUS

<400> 48

Ile Ser Leu Ser Glu Ile Lys Gly Val Ile Val His Lys Leu Glu Gly
1 5 10 15

Val Leu Phe

<210> 49

<211> 19

<212> PRT

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SEQUENCE DERIVED FROM MEASLES VIRUS

<400> 49

Ile Ser Ile Ser Glu Ile Lys Gly Val Ile Val His Lys Ile Glu Gly
1 5 10 15

Ile Leu Phe

<210> 50

<211> 19

<212> PRT

<213> Artificial Sequence

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SEQUENCE DERIVED FROM MEASLES VIRUS

<400> 50

Ile Ser Ile Thr Glu Ile Arg Thr Val Ile Val Thr Arg Ile Glu Thr
1 5 10 15

Ile Leu Phe

<210> 51

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<211> 19
<212> PRT
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SEQUENCE DERIVED FROM MEASLES VIRUS

<400> 51
Ile Ser Leu Ser Glu Ile Lys Gly Val Ile Val His Lys Leu Glu Gly
1 5 10 15

Met Leu Phe

<210> 52
<211> 19
<212> PRT
<213> Artificial Sequence

<220>
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SEQUENCE DERIVED FROM MEASLES VIRUS

<400> 52
Ile Ser Met Thr Glu Met Arg Thr Val Ile Val Thr Arg Met Glu Thr
1 5 10 15

Val Leu Phe

<210> 53
<211> 19
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: T HELPER
SEQUENCE DERIVED FROM MEASLES VIRUS

<400> 53
Ile Ser Leu Thr Glu Ile Arg Thr Val Ile Val Thr Arg Leu Glu Thr
1 5 10 15

Val Leu Phe

<210> 54
<211> 19
<212> PRT
<213> Artificial Sequence

<220>
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SEQUENCE DERIVED FROM MEASLES VIRUS

<400> 54

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Ile Ser Ile Thr Glu Ile Arg Thr Val Ile Val Thr Arg Ile Glu Thr
1 5 10 15

Ile Leu Phe

<210> 55
<211> 19
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: T HELPER
SEQUENCE DERIVED FROM MEASLES VIRUS

<400> 55
Ile Ser Ile Ser Glu Ile Lys Gly Val Ile Val His Lys Ile Glu Gly
1 5 10 15

Ile Leu Phe

<210> 56
<211> 19
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: T HELPER
SEQUENCE DERIVED FROM MEASLES VIRUS

<400> 56
Ile Ser Ile Thr Glu Ile Arg Thr Val Ile Val Thr Arg Ile Glu Thr
1 5 10 15

Ile Leu Phe

<210> 57
<211> 19
<212> PRT
<213> Artificial Sequence

<220>
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SEQUENCE DERIVED FROM MEASLES VIRUS

<400> 57
Ile Ser Met Ser Glu Met Lys Gly Val Ile Val His Lys Met Glu Gly
1 5 10 15

Met Leu Phe

<210> 58
<211> 19

815648 v1

<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: T HELPER
SEQUENCE DERIVED FROM MEASLES VIRUS

<400> 58
Ile Ser Leu Thr Glu Ile Arg Thr Val Ile Val Thr Arg Leu Glu Thr
1 5 10 15
Val Leu Phe

<210> 59
<211> 15
<212> PRT
<213> Hepatitis B virus

<400> 59
Phe Phe Leu Leu Thr Arg Ile Leu Thr Ile Pro Gln Ser Leu Asp
1 5 10 15

<210> 60
<211> 18
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: T HELPER
SEQUENCE DERIVED FROM HEPATITIS B VIRUS

<400> 60
Lys Lys Lys Phe Phe Leu Leu Thr Arg Ile Leu Thr Ile Pro Gln Ser
1 5 10 15
Leu Asp

<210> 61
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: T HELPER
SEQUENCE DERIVED FROM HEPATITIS B VIRUS

<400> 61
Phe Phe Leu Leu Thr Arg Ile Leu Thr Ile Pro Gln Ser Leu
1 5 10

<210> 62
<211> 18
<212> PRT
<213> Artificial Sequence

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<220>

<223> Description of Artificial Sequence: T HELPER
SEQUENCE DERIVED FROM HEPATITIS B VIRUS

<400> 62

Lys Lys Lys Leu Phe Leu Leu Thr Lys Leu Leu Thr Leu Pro Gln Ser
1 5 10 15

Leu Asp

<210> 63

<211> 18

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: T HELPER
SEQUENCE DERIVED FROM HEPATITIS B VIRUS

<400> 63

Arg Arg Arg Ile Leu Ile Ile Thr Arg Ile Ile Thr Ile Pro Leu Ser
1 5 10 15

Ile Arg

<210> 64

<211> 18

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: T HELPER
SEQUENCE DERIVED FROM HEPATITIS B VIRUS

<400> 64

Lys Lys Lys Val Arg Val Val Thr Lys Val Val Thr Val Pro Ile Ser
1 5 10 15

Val Asp

<210> 65

<211> 18

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: T HELPER
SEQUENCE DERIVED FROM HEPATITIS B VIRUS

<400> 65

Lys Lys Lys Phe Phe Phe Phe Thr Lys Phe Phe Thr Phe Pro Val Ser
1 5 10 15

Phe Asp

<210> 66
<211> 18
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: T HELPER
SEQUENCE DERIVED FROM HEPATITIS B VIRUS

<400> 66
Lys Lys Lys Leu Phe Leu Leu Thr Lys Leu Leu Thr Leu Pro Phe Ser
1 5 10 15

Leu Asp

<210> 67
<211> 18
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: T HELPER
SEQUENCE DERIVED FROM HEPATITIS B VIRUS

<400> 67
Lys Lys Lys Ile Ile Thr Ile Thr Arg Ile Ile Thr Ile Ile Thr Thr
1 5 10 15

Ile Asp

<210> 68
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: T HELPER
SEQUENCE DERIVED FROM HEPATITIS B VIRUS

<400> 68
Lys Lys Lys Ile Ile Thr Ile Thr Arg Ile Ile Thr Ile Ile Thr Thr
1 5 10 15

Ile

<210> 69
<211> 18
<212> PRT
<213> Artificial Sequence

815648 v1

<220>

<223> Description of Artificial Sequence: T HELPER
SEQUENCE DERIVED FROM HEPATITIS B VIRUS

<400> 69

Lys Lys Lys Met Met Thr Met Thr Arg Met Ile Thr Met Ile Thr Thr
1 5 10 15

Ile Asp

<210> 70

<211> 16

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: T HELPER
SEQUENCE DERIVED FROM HEPATITIS B VIRUS

<400> 70

Phe Ile Thr Met Asp Thr Lys Phe Leu Leu Ala Ser Thr His Ile Leu
1 5 10 15

<210> 71

<211> 19

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: T HELPER
SEQUENCE DERIVED FROM HEPATITIS B VIRUS

<400> 71

Lys Lys Lys Phe Ile Thr Met Asp Thr Lys Phe Leu Leu Ala Ser Thr
1 5 10 15

His Ile Leu

<210> 72

<211> 16

<212> PRT

<213> Yersinia pseudotuberculosis

<400> 72

Thr Ala Lys Ser Lys Lys Phe Pro Ser Tyr Thr Ala Thr Tyr Gln Phe
1 5 10 15

<210> 73

<211> 6

<212> PRT

<213> Homo sapiens

<400> 73

Pro Pro Asp Pro Asp Pro

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1

5

<210> 74
<211> 46
<212> PRT
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: T HELPER
SEQUENCE DERIVED FROM MEASLES VIRUS AND E. COLI

<400> 74

Ile Ser Ile Ser Glu Ile Lys Gly Val Ile Val His Lys Ile Glu Gly
1 5 10 15
Ile Leu Phe Gly Gly Phe Ala Cys Lys Thr Ala Asn Gly Thr Ala Ile
20 25 30
Pro Ile Gly Gly Gly Ser Ala Asn Val Tyr Val Asn Leu Ala
35 40 45

<210> 75
<211> 46
<212> PRT
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: T HELPER
SEQUENCE DERIVED FROM MEASLES VIRUS AND E. COLI

<400> 75

Ile Ser Ile Thr Glu Ile Arg Thr Val Ile Val Thr Arg Ile Glu Thr
1 5 10 15
Ile Leu Phe Gly Gly Phe Ala Cys Lys Thr Ala Asn Gly Thr Ala Ile
20 25 30
Pro Ile Gly Gly Gly Ser Ala Asn Val Thr Val Asn Leu Ala
35 40 45

<210> 76
<211> 46
<212> PRT
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: T HELPER
SEQUENCE DERIVED FROM MEASLES VIRUS AND E. COLI

<400> 76

Ile Ser Ile Ser Glu Ile Lys Gly Val Ile Val His Lys Ile Glu Gly
1 5 10 15
Ile Leu Phe Gly Gly Phe Ala Ser Lys Thr Cys Asn Gly Thr Ala Ile
20 25 30
Pro Ile Gly Gly Gly Ser Ala Asn Cys Tyr Val Asn Leu Ala

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35

40

45

<210> 77
<211> 46
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: T HELPER
SEQUENCE DERIVED FROM MEASLES VIRUS AND E. COLI

<400> 77
Ile Ser Ile Thr Glu Ile Arg Thr Val Ile Val Thr Arg Ile Glu Thr
1 5 10 15
Ile Leu Phe Gly Gly Phe Ala Ser Lys Thr Cys Asn Gly Thr Ala Ile
20 25 30
Pro Ile Gly Gly Gly Ser Ala Asn Cys Tyr Val Asn Leu Ala
35 40 45

<210> 78
<211> 34
<212> PRT
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<220>
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SEQUENCE DERIVED FROM MEASLES VIRUS AND E. COLI

<400> 78
Ile Ser Ile Ser Glu Ile Lys Gly Val Ile Val His Lys Ile Glu Gly
1 5 10 15
Ile Leu Phe Gly Gly Cys Ala Ser Lys Thr Ala Asn Gly Thr Ala Ile
20 25 30
Pro Cys

<210> 79
<211> 34
<212> PRT
<213> Artificial Sequence

<220>
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SEQUENCE DERIVED FROM MEASLES VIRUS AND E. COLI

<400> 79
Ile Ser Ile Thr Glu Ile Arg Thr Val Ile Val Thr Arg Ile Glu Thr
1 5 10 15
Ile Leu Phe Gly Gly Cys Ala Ser Lys Thr Ala Asn Gly Thr Ala Ile
20 25 30
Pro Cys

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<210> 80
<211> 30
<212> PRT
<213> Artificial Sequence

<220>
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SEQUENCE DERIVED FROM MEASLES VIRUS AND E. COLI

<400> 80
Ile Ser Ile Ser Glu Ile Lys Gly Val Ile Val His Lys Ile Glu Gly
1 5 10 15
Ile Leu Phe Gly Gly Cys Asp Tyr Pro Glu Thr Ile Thr Cys
20 25 30

<210> 81
<211> 30
<212> PRT
<213> Artificial Sequence

<220>
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SEQUENCE DERIVED FROM MEASLES VIRUS AND E. COLI

<400> 81
Ile Ser Ile Thr Glu Ile Arg Thr Val Ile Val Thr Arg Ile Glu Thr
1 5 10 15
Ile Leu Phe Gly Gly Cys Asp Tyr Pro Glu Thr Ile Thr Cys
20 25 30

<210> 82
<211> 32
<212> PRT
<213> Artificial Sequence

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<223> Description of Artificial Sequence: T HELPER
SEQUENCE DERIVED FROM MEASLES VIRUS AND E. COLI

<400> 82
Ile Ser Ile Ser Glu Ile Lys Gly Val Ile Val His Lys Ile Glu Gly
1 5 10 15
Ile Leu Phe Gly Gly Cys Asn Asp Tyr Pro Glu Thr Ile Thr Asp Cys
20 25 30

<210> 83
<211> 32
<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: T HELPER
SEQUENCE DERIVED FROM MEASLES VIRUS AND E. COLI

<400> 83

Ile Ser Ile Thr Glu Ile Arg Thr Val Ile Val Thr Arg Ile Glu Thr
1 5 10 15

Ile Leu Phe Gly Gly Cys Asn Asp Tyr Pro Glu Thr Ile Thr Asp Cys
20 25 30

<210> 84

<211> 39

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: T HELPER
SEQUENCE DERIVED FROM MEASLES VIRUS AND E. COLI

<400> 84

Ile Ser Ile Ser Glu Ile Lys Gly Val Ile Val His Lys Ile Glu Gly
1 5 10 15

Ile Leu Phe Gly Gly Cys Ile Leu Arg Gln Thr Asn Asn Thr Asn Ser
20 25 30

Asp Asp Phe Gln Phe Val Cys
35

<210> 85

<211> 39

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: T HELPER
SEQUENCE DERIVED FROM MEASLES VIRUS AND E. COLI

<400> 85

Ile Ser Ile Thr Glu Ile Arg Thr Val Ile Val Thr Arg Ile Glu Thr
1 5 10 15

Ile Leu Phe Gly Gly Cys Ile Leu Arg Gln Thr Asn Asn Tyr Asn Ser
20 25 30

Asp Asp Phe Gln Phe Val Cys
35

<210> 86

<211> 10

<212> PRT

815648 v1

<213> Escherichia coli

<400> 86

Cys Glu Asp Tyr Pro Asp Thr Ile Thr Cys
1 5 10

<210> 87

<211> 12

<212> PRT

<213> Escherichia coli

<400> 87

Cys Asn Asp Tyr Pro Glu Thr Ile Thr Asp Ala Cys
1 5 10

<210> 88

<211> 21

<212> PRT

<213> Escherichia coli

<400> 88

Thr Gln Ile Phe Cys His Asn Asp Tyr Pro Glu Thr Ile Thr Asp Cys
1 5 10 15

Tyr Val Asp Leu Ala
20